Towards an Ecological View of Special Education for Rural and Indigenous Areas

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Abstract

Introduction. Ecological models which address educational phenomena assert that students are involved in multiple environments where they play different roles. In each environment they are expected to show certain behaviors; sometimes this can create conflicts, perhaps due to a discrepancy between the individual's skill in meeting the requirements of that environment, or because the environment does not meet the individual's needs. From this perspective, this study seeks to determine how special educational needs are manifest in indigenous children at the beginning of their formal schooling, as well as to analyze the relationship between such needs and the various environmental forces surrounding the youngsters.

Method. Our methodology was in part qualitative, using ethnographic techniques through which we recorded data from the cultural, family and school contexts. Quantitative methodology was used in application of a psychological instrument to 96 Otomi children, 50 boys and 46 girls. Results were correlated with different variables such as parents' occupation, parents' literacy, and the child's gender and age.

Results. We describe discrepancies between the child's skills acquired at home and those required at school. Both quantitative and qualitative data which we collected document the difficulties exhibited by the Otomi children when entering primary education: significant differences in use of skills were found in those who were repeating grade and those who had attended preschool. The cultural and family environment limits educational expectations as well as how long the children remain in school.

Discussion. Using an ecological approach in screening for special educational requirements in children from rural and indigenous areas, and in addressing those requirements, reveals the need to include other variables for analysis. The interaction of these variables with the child makes it possible to gain a better understanding of this particular issue. Clearly the task is not easy, but responsibility for these difficulties should not continue to be focused on the child, particularly in these populations where improper application and interpretation of tests can add yet another element of marginalization: that of disability.

Keywords: special needs, educational ecology, native populations, evaluation

Introduction

Ecological approaches which seek to help us understand school learning emphasize the way in which the environment exercises a continuous, ongoing action on the child, so that it is necessary to consider its influence through various people, situations and places. Even though there is an increasing amount of research from this perspective, there is little evidence as to how to conceptualize the problems such that an intervention can be carried out from this perspective. For Swartz and Martin (1997), use of this approach should above all accomplish changes in different ecosystems, due to the multiplicity and diversity of environments in which the individual functions.

Communities, families, schools and individuals form part of the ecological systems within the ecosystems; therefore, an appropriate intervention will be based on an adequate understanding of these networks. The child is immersed in a complex interaction with diverse environmental forces. For Báez de la Fé (1988), the dynamic variables considered from this position are: the pupil, the classroom, the infrastructure, the family and the setting. In the field of special education, Kauffman (1995) indicates that ecological principles are important, since current policies of educational integration affirm the need to build a general social system that is friendly and includes a variety of environments, aimed at the diversity of population characteristics.

Both internal and external characteristics of the interaction between the individual and the environment determine the person's behaviors, so that, from this perspective, we emphasize the study of the interaction of systems in which the individual is functioning (Swartz & Martin, 1997). Current ecological orientations seek to: (a) describe the contexts in which the individual is immersed; (b) conceptualize the ecological environment at several levels of analysis; (c) recognize the differences between diverse environments; (d) accept that the individual's behavior is transactional and cannot be understood outside the context in which it occurs; and, (e) construct interventions for specific ecologies.

Culture is the means by which the individual adapts to the demands of the environment, ecological approaches assume the concept of homeostasis; in this sense, culture is what provides the elements for adjustment and adaptation, whether they are biological, psychologi-

cal or cultural. They may or may not form part of the behavioral repertory of the subject, and there may even be a disparity between the individual and the environment. For Aguirre Beltrán (1992), analysis of education should be undertaken in the context in which it is carried out. Integrating action in indigenous education implies bringing together fields of activity which are normally addressed separately, such as: education through schooling, health, economy and agriculture. In so-called "ecological" terms, the author emphasizes the interaction of man and his habitat in a more or less homogeneous socio-geographic unit, which he called a region. When this region is intercultural, the integrated action proposed for education should take into account the human groups which are in contact.

Ecological models which address the study of educational phenomena claim that students are involved in multiple environments in which they play diverse roles. In each of these environments, they are expected to show certain behaviors, which at times creats conflicts that may be due to a discrepancy between the individual's skill and the requirements of the environment, or, because the environment does not meet the needs of the subject (Swartz & Martin, 1997). A key aspect of these models is that they modify the approach which addresses the educational phenomenon by focusing only on the person; they seek to study the relationship between the person and the diverse elements of his or her environment (Acle, 2003). The ecological approach is considered a framework for guiding the way in which we think about school and about learning (Acle, 2000; Adelman & Taylor, 1994).

The above statements as well pertain to evaluation and intervention procedures; authors like Rosenberg (1987), Sugai and Maheady (1988) recommend that assessment carried out with people of different cultures should include: acquisition of basic skills, subject content, the systematic interaction between the group and the instruction, as well as learning opportunities experienced. Evaluation should be based on the fundamentals of the ecological perspective: offering a comprehensive view of the problem, not ruling out traditional forms of evaluation, on the contrary, integrating them so that all the interacting systems can be understood; and, making the study of the relationship between environmental and individual expectations be the principal object of study, so as to identify behaviors, scenarios and conditions in which the intervention will be made (Adelman & Taylor, 1994, Swartz & Martín, 1997).

Using this perspective in studying educational aspects which refer to indigenous populations acquires special relevance when we consider that the indigenous population of Mexico is made up of 12,700,000 people. Only 41% of indigenous five-year-olds attend school, and 87.2% of children from 6 to 14 years of age. In the population aged 15 years and older, only 67.5% is literate; in this age range it is also reported that 25.8% have not received any instruction, 27.2% did not complete primary education, 18.7% completed primary only, and 28.2% have studies beyond primary (Serrano, Embriz & Hernández, 2002). Not only are these percentages significant in themselves, but other considerations are added which relate to the enormous geographic, cultural and economic differences which exist in a country like Mexico, where greater benefits are found in the large urban centers, and many Mexicans are still marginalized in education, among them the indigenous populations.

The rural, indigenous population shares a condition of poverty and social marginalization with many other sectors of the population. The social and economic inequality of this type of community is a factor which not only determines differential access to the school system, but also the different mechanisms of incorporation into different levels of the educational system. For example, incorporation of special educational services is recent, dating from the 1988-1994 period, where for the first time the objective of giving special attention to rural, indigenous areas appears stipulated in the Program for Educational Modernization 1989-1994. From this stipulation a basic question arose: *Under what concept of special education would this be worked out?* For the purposes of special education, a difference would consist of a marked discrepancy, either superior or inferior, in an individual's execution of any type of task, in relation to that of the majority (Kirk & Gallagher, 1989). But, under what circumstances would the individuals' execution be considered superior or inferior? In a country like Mexico with so many economic and sociocultural differences, both in the city as well as in the country, what would be considered a deviation from the norm?

The above stipulation led to reflection about how to establish the limit between special education and regular education in rural and indigenous areas. This reflection became especially notable when Izquierdo, Fernández and Nieto (1992) proposed a model for special education in the indigenous setting which emphasized the need to give it characteristics that take into account their principles, settings and culture. In order to implement what was stated in the above Program, the General Department of Special Education designed a project: "*Screening for Special Education Demand in rural and indigenous areas*", where educational ine-

qualities in this area were acknowledged, as well as variations which occur among different communities and ethnic groups.

For this purpose, Paéz and Trejo (1994) developed an "*Observation Guide for the Teacher*", a questionnaire composed of 80 dichotomous statements that were answered by teachers in rural areas chosen for the study. This guide focused mainly on determining the presence of four categories: (a) mental deficiency; (b) hearing problemas; (c) neuro-motor problems; and, (d) visual problems. Based on results obtained, the authors indicated that out of a total sample population of 432 children (n=2260), two groups could be differentiated: one group of 174 minor age children (40.3%) who presented some type of deficit corresponding to the categories defined in the guide, and, another group of 258 children (59.7%) who showed learning and/or behavior problems. Significant data indicate that 19.11% of the sample studied are found to have special education requirements, a percentage greatly exceeding the 10% stipulated by the World Health Organization for a country's total population.

Subsequently, a project called "*Design of an Ecological Model of Evaluation-Intervention for Special Educational Needs in a Rural, Indigenous Area"* has been underway since 1995. This project is based on basic assumptions of the ecological approach mentioned earlier, as well as emphasizing that:

(1) School constitutes a habitat created by man, and has its own place within an ecosystem composed of political, social, legal, economic, cultural and educational aspects.
(2) The notion of dynamic interrelationship among different elements of an ecosystem is a key aspect, since a system is made up of a set of interwoven elements which then interact among themselves -- when one of them moves, the whole set is modified, all elements have equal weight since the whole is greater than the sum of the parts (Acle, 2003).

The specific purpose of the project was to show how the interaction among diverse players – children, parents, teachers, school administration – and elements – culture, health, bilingualism, educational policy, self-concept, learning content and materials – allow one to document the appearance, continuance and eradication of special educational needs (SEN) in Otomi children. Work was carried out in the municipality of Temoaya, Mexico state, where the population is Otomi, the area is bilingual, 97% speak an indigenous language, with Otomi as the language most spoken. Of the population aged 15 years or older, 20.4% have not re-

ceived any instruction, 35% have some primary studies, 21.2% have completed primary education only, and only 23.2% have further studies (Serrano, et al., 2002).

A primary task within the project was, at the beginning of the schoolyear, to screen for first-grade Otomi children in a monolingual Spanish school who had learning disabilities. Likewise, we were to analyze the external conditions under which this lack of performance occurred, considering that in first grade only, teachers have been reporting an average of 20% of pupils with learning problems. In an initial exploratory study, Acle and Roque (1994) found deficiencies in the performance of expressive and written language tasks, such as dictation and copying. Nonetheless, despite the fact that the instruments used did provide information to characterize the disabilities found, they also proved to be inadequate and to severely penalize children from rural indigenous groups. Based on these findings we developed a specific instrument to screen for difficulties in the visual-motor and auditory-verbal areas, basic precursors for achievement in school learning (Acle, Roque & Contreras, 1996). We kept in continuous contact with the teacher in order to assure that tasks required of the students reflected activities being taught in class.

Significant findings from this study were as follows: (1) A disparity of ages. Only 48% were six-year-olds, the legal age in Mexico for enrolling in first grade of primary school; the remainder ranged from 7 to 10 years of age. (2) Only 41% had taken a year of preschool. (3) In the verbal area, the most remarkable finding was that older children were less able than the younger ones to group colors, given the stimuli. As for representation activities, it was observed that the younger children were not yet able to form semantic fields without the objects. (4) Otomi children participate in domestic and external work activities as part of the social organization of the family. Thus it is necessary to consider the family setting as an indispensable element for understanding interest and participation in learning from both the child and the child's parents. (5) Within the classroom, regarding teacher-pupil interaction, we did not observe the establishment of a genuine, trusting relationship, nor were the child's self-regulation and self-organization encouraged, since the teacher continues to use passive teaching techniques, set forth in the official program must be applied, with no consideration for cultural patterns of the daily life of these indigenous children (Acle, Roque & Contreras, 1996).

The purpose of the present study was to determine how special educational needs manifest themselves in indigenous children upon enrollment in first grade of primary education, as well as to analyze how these needs are linked to the characteristics and demands of the different environmental forces that surround the child, in particular, environmental forces of cultural, family and school contexts.

Method

Participants

Sample selection was of an intentional non-probabilistic type. Participants were 96 Otomi children, 50 boys and 46 girls, between the ages of 5 years 7 months and 8 years 10 months (X = 6 years 5 months), 52% of the sample had attended preschool, and 12% were repeating grade. Relevant parental data were: only 76% claimed to know how to read, 25% were merchants, 65.6% were dedicated to the home, 3% were domestic servants, and only 1% reported having studied a professional degree, that of Primary School teacher. The mothers' average schooling completed was second grade of primary school.

Instrument

We developed the screening instrument *ex profeso*. It contained two main parts: the visual-motor area and the auditory-vocal area. For the former, paper and pencil tests were used in which the following skills were evaluated: discrimination of letters, visual-motor integration and drawing the human figure. For the latter, the following skills were considered: color knowledge, handling semantic fields (animals, plants, fruits), short-term auditory memory in repetition of digits and sentences. Each item was scored from 0 a 10. When choosing tasks, we considered aspects of visual-motor maturity expected at that age, as well as school activites that had been worked on with the teacher. We continuously carried out interviews with the first-grade teachers, with some of the parents and with school administrators, as well as keeping a log of observations of the cultural context.

Context and scenario

Temoaya is a municipality made up of 38 indigenous towns, located 20 kilometers from Toluca and 80 kilometers from the Federal District. As indicated, the area is bilingual; 97% speak an indigenous language, with Otomi as the most spoken (Serrano et al., 2002).

The population is one of farmworkers, with much migration, particularly in males. The number of registered schools for 1995 was 121: 54 preschools, 48 primary, 16 secondary, one *preparatoria* [upper-level secondary], one trade school, and one technical school. The ratio of number of primary schools to middle schools and higher-level schools continues to be pyramidal and unproportional, considering that demographic indices of the municipality show 59% of the total population to be under 19 years of age (Acle & Roque, 1994; Acle, 2003).

In this context, the study scenario was a monolingual school in Spanish, located in one of the indigenous towns of the municipality. An important characteristic of this setting is that, unlike the schoolchildren who attend, teachers and school administrators are not indigenous people. We might mention that this school is prestigious within the community, and that approximately 510 students attend; the official study program established by the Ministry of Education for all Mexican schools is followed. Generally speaking, the teacher-pupil ratio for the 1998-99 school year was 1 to 36, which according to teachers, favors the teaching/learning process.

Procedure

It is important to keep in mind that both the quantitative and qualitative methodology took special education as the object of study, and systematic procedures were used in carrying out the research (Roque, 2001). In this sense, quantitative methodology was fundamental for systematizing the analysis of the instrument results and for the comparison between variables. Qualitative methodology was basically ethnographic, supported by instruments such as: observation logs, interview outlines, and information gathering from various sources.

After requesting authorization from the school principal for applying the instrument, it was administered to children recently enrolled in first year, and who were divided into three class groups. Application of the visual-motor part was done as a group, in one session lasting approximately one and a half hours. The teacher for each group was present and collaborated in the application. As for the auditory-verbal part, this was applied individually and took approximately 40 minutes per child. The instrument scored each of the two aspects with values from one to ten. Constant contact with teachers made possible: (1) for us to know their opinions about which children they felt had disabilities, and (2) for them to know which children were being detected in the screening process. In addition we performed observations of their

interaction with the children inside and outside of the classroom, as well as keeping a log of the general dynamic of the school and of the school census.

A descriptive analysis was carried out that enabled observation of the children's performance on each of the items, using the Student t test for independent samples. The objective was to evaluate whether there were differences in task performance with relation to preschool attendance and to repeating grade. Spearman's correlation was used In order the assess the relationship between performance in these areas and the variables of gender, age, parents' knowledge of reading, parents' occupation and mother's age.

Information obtained from the interviews and the observation log were analyzed qualitatively, being classified into the following categories for analysis: teacher-child relationship, teacher-family relationship, and family-environment relationship.

Results

An initial remark with regard to children's ages: even though the group average corresponds to the expected age for attending first grade – 6 years 5 months -- we noted that 11.5% of the sample was above 8 years of age, this percentage corresponding to the number of children who were repeating first grade. Just as in the study carried out by Acle, Roque and Contreras in 1996, a diversity of children's ages was noted. This relates to the importance of indigenous children attending school, such that enrollment requirements are made more flexible than for schools in urban centers, where age requirements for enrolling in primary school are strictly followed.

The group's performance in the areas evaluated can be seen in Table 1. One can note a significantly low average for tasks of recognizing geometric figures and of short-term auditory memory. Nonetheless, it is worth mentioning that the frequency analysis for each task reveals a significant percentage of children in the lower performance group for: letter discrimination, visual-motor integration, color identification and identification of geometric figures.

Table 1. Descriptive analysis of scores obtained for skills under evaluation.

Visual-motor Area	**Lowest Score**	**Highest Score**	**Average**	**Standard Deviation**	**% of n in Lower Group**
Letter discrimination	0	10	6.9	1.9	46.3
Visual-motor integration	2.8	10	7.7	1.6	22.9
Human Figure	0	10	10	0	0
Auditory-verbal Area					
Color	0	10	7.7	3.6	36.8
Geometric Figures	0	10	2.9	3.3	89.5
Semantic field	0	10	9.8	1.2	5.3
Short-term auditory memory	0	10	5	2.2	72.3
Repetition of Phrases	5	10	9.8	.72	2.1

Although all children could draw the human figure, 33% of them drew the figure too simply. These results are significant and indicate the possible presence of SEN, being linked on one hand to limited preschool attendance (52% of the sample had attended preschool), and on the other hand to cultural differences between home and school. Furthermore, although the remaining 48% did attend preschool, many of the children only attended the final year before enrolling in primary; mothers indicated that due to financial limitations they did not send them earlier. The teachers, for their part, feel that one year of preschool is insufficient.

In order to assess whether there were differences between the variables of preschool attendance and grade repetition as compared to performance on required tasks, we applied the Student t test for independent samples. Results show that children who attended preschool performed better than the non-attendees on some of the tasks, such as visual-motor integration ($t = 2.310$, $p = <.02$) and correct naming of basic geometric figures ($t = 4.027$, $p =<.00$): results speak in favor of preschool attendance. Likewise, children repeating grade had better performance on visual-motor integration ($t = 2.330$, $p = <.04$) and on letter discrimination ($t = 2.443$, $p= <.03$), thus revealing the schooling they had already received.

A correlational analysis was performed in order to determine if any degree of association existed between the following variables: gender, child's age, preschool attendance, parent

literacy, parents' occupation and mother's age as compared to performance on the tasks evaluated (Table 2.). The analysis showed significant positive relationships between the mother's occupation with performance on letter discrimination (r = .208) and on short-term auditory memory (r = .232), which can be related to the mother's indication that they help the children to do their schoolwork. Similar relationships were found between child's age and performance on visual-motor integration (r = .270) and on handling semantic fields (r = .224), having to do with their own developmental progress.

However, significant negative correlations were seen between parent literacy and the child's score on visual-motor integration tasks (r = -.228) and on knowledge of primary colors (r = -.268), as well as between preschool attendance and performance on visual-motor integration (r = -.228), knowledge of primary colors (r = -.291) and knowledge of geometric figures (r = -.399), indicating that there is no relationship between these external factors and children's performance in these basic areas. Suffice it to say that 24% of the parents did not know how to read and 48% of children did not attend preschool; and, in the latter case, better performance was observed in those children who had attended preschool.

Table 2. Correlation results between established variables

Visual-motor area	**Gender**	**Age**	**Preschool attendance**	**Parental literacy**	**Parents' occupation**	**Mother's age**
Letter discrimination	.071	.161	-.037	-.099	.208*	.171
Visual-motor integration	-.127	.270**	-.228*	-.228*	.120	.004
Auditory-verbal area						
Color	-.049	.153	-.291**	-.268*	.151	-.090
Geometric figures	.046	.020	-.399**	-.111	.049	.013
Semantic field	-.057	.224*	-.134	-.085	-.083	.059
Short-term auditory memory	.108	.029	-.117	-.038	.232*	.037
Repetition of Phrases	.142	-.167	-.017	.081	-.054	.040

** p=<. 01, * p=< .05

Relevant data from observations and interviews indicate that, inside the classroom, in reference to the teacher-pupil relationship, first-grade teachers did not promote either participation or self-regulation among the children, who were constantly leaving their places to approach the teacher and ask for his or her approval or to show what they had done. When some topic was being explained, if the children did not understand, they copied from each other and helped each other. Making requirements of the students was equivalent to raising one's voice, this was how teachers supposedly helped the children attain self-control and independence. By contrast, in academic work there was a rigid amount of time in which children were to reach learning objectives, with limits determined by the formal curriculum. All children must learn to read and write in an equal allotment of time in order to fulfill programs established by the Ministry of Education.

In this matter, some teachers do show real concern about the children learning, others were more interested in fulfilling administrative requirements. As for the children's deficiencies, and lack of parental participation in their children's schooling, teachers from this rural primary school attribute these in some cases to negative attitudes toward certain cultural characteristics of this population. In the case of teachers concerned about the children's learning, they themselves recognize a lack of preparation in how to teach children with learning disabilities; generally speaking they felt alone, they knew that they must ensure the child's progress, that they mustn't have failures, but they also recognize that it was not easy, because *"parents do not cooperate ", "it is the parents who develop children's habits of focusing attention and study outside of school "*.

By way of contrast, it is relevant that for the parents interviewed, the value of school is entirely functional; it relates to the importance of learning to read, write, speak and understand Spanish, so that in the future their children can participate in commerce and find work. On the other hand, parents are affected by their socioeconomic and cultural condition, and assume that only the teacher knows, so they do not dare to ask questions even when they have doubts. In their own way, they help their children do their schoolwork, so that they will: *"...understand and learn, will work well and quickly, will not be punished or scolded, nor will anyone protest to me about the money I'm spending on him...","...even though I don't know how to read or write, I set him down to work, to fill in his notebooks, I watch him, I make him*

work, I spank him, I push him or I scold him...". One complaint from the mothers interviewed was the teachers never explain what the scores mean or the corrections that they make in the notebooks, they only tell them that the children are doing badly and that they must make them study, but they don't indicate how to do that, and given the mothers' own educational and linguistic level, they find this difficult.

With regard to the connection between teachers and parents, it is interesting to observe that many teachers consider it better for parents not to intervene in education, some of them indicated why: *"...their participation is not helpful, they are unable to contribute or help with anything, all the problems that arise are on account of them ", "...because of what little knowledge that they have, and because they have other priorities having to do with subsistence".* These comments show differences pertaining to the cultural relevance of school learning; teachers and parents views do not meet. Add to this that there are no specific, established mechanisms for teacher-parent collaboration specifically in academic aspects, although these do exist for other activities, such as participation in organizing various events: school breakfasts, parties or ceremonies.

Discussion

The rise of ecological approaches for explaining learning problems is relatively recent and has repercussions to the extent that it addresses the influence of the environment on their presence, continuance or eradication. Participating in a cultural context different from one's own leads to a need for conceiving new, different approaches and methods for evaluation and intervention. This acquires undeniable relevance in characterizing learning problems and special educational needs in indigenous populations, above all if we consider the low educational indices in these populations -- and not only in the case of Mexico. Data obtained in this study give an indication of different elements that interact to encourage or discourage school learning from the time indigenous children first begin.

The instrument which was applied to the children confirms what Swartz and Martín (1997) reported with regard to the discrepancy between skills that the children exhibit and those required for successful execution of school assignments. This in turn has to do with linguistic and cultural differences between the home and the school. It is undeniable that

children arrive at school with prior knowledge, but this knowledge is not what the school requires; for example, in fine motor coordination skills they are able to shell corn but not perform paper and pencil tasks. In fact, considering low family income as well as parents' level of schooling, the children have little access to written material until they enroll in primary education, when they receive books that are distributed at no cost.

These discrepancies in skills required by the school are reflected in the following results: (a) 46.3% of the sample had difficulty in discriminating letters; (b) 22.9% were unable to draw geometric figures; (c) although all children were able to draw the human figure, 33% of them did so in an overly simple fashion; (d) 36.8% were not able to identify primary colors, (e) 89.5% had difficulty in naming basic geometric figures, (f) 72.3% were not able to repeat a series of digits, but 97.9% were able to repeat meaningful sentences correctly. These are essential skills for acquiring reading and writing, and they are generally learned at the preschool level, as is confirmed by the significant correlation between preschool attendance and performance on tasks of visual-motor integration and identification of geometric figures.

One obvious aspect is children's low preschool attendance; at the two preschools in the town where we performed this study, total school enrollment for the 1997-98 schoolyear was only 53 children. Some of the reasons given by Otomi mothers for not sending their children to preschool are reflected in the following quote: *"we already pay for the other children to attend primary and we can't pay to send the other children to this school, and besides, just so they can play"*. If we heed the statement from the World Health Organization, that 10% of a given population will present special education requirements, it is clear that the higher percentages of difficulty shown here constitute a reason for reflection and for attention to these populations.

As for the family-environment variable, relevant data indicate that family income determines the educational level of the children, since it affects the ability to meet educational costs, as well as children's possible participation in education; sending them to school involves direct expenses. Other aspects are linked to educational aspirations; most Otomi parents interviewed did not perceive any advantage in offering their children further education beyond learning to read, write, and count -- what would ensure them a job in the future, which

in many cases is not so remote as in the urban setting, there are parents who take their children out of school in third grade and "hire" them out as workers. Roque (2001) states that the lack of family support is caused by lack of time; having many children, various occupations, many of which are outside the community; being illiterate themselves, not knowing the language used in education; or thinking that education is only incumbent on the teacher; or feeling unmotivated because their participation is only requested for non-learning activities such as painting, sweeping, building classrooms or preparing hot breakfasts.

It is important to note that in childrearing at home, the gender difference prevails, even if some tasks are performed by both girls and boys. The fact is that all children, from a very young age, carry out different activities according to gender: girls are mainly occupied in household chores, while boys perform activities outside the home. As for language, mothers report teaching their children to speak Spanish more than Otomi, "Otomi is no good". However, Otomi is spoken both inside and outside the home, so children end up learning it, they understand it because they hear their parents use it when communicating with their own parents and with other adults. Additionally, mothers indicated that they did not talk with their children about how they were doing in school, since, according to them, *"the children aren't old enough yet for thinking"*.

And so we observe that in the teacher-parent relationship, there is also a disparity in the conception of learning and in development of skills that the children need to function adequately in both environments. Along these lines, Sandoval (1992) acknowledges that teacher training in many cases has been unable to prepare the teacher to face a number of problems that come up on a daily basis in the classroom. This becomes even more difficult when the teacher is sent to distant locations and to populations whose culture is different from his or her own. Heshusius (1991) indicates that ethnic inequalities between teachers and pupils can be one of the reasons that students do not learn, the cultural difference can lead the teacher to not identify with the school where he or she is working, something which we observed in a few cases.

What we have described till this point has important repercussions in the child's progress at school, as well as in indices of attrition and/or continuance at school. In the relation-

ship between informal education and schooling, there is a clear difference. Informal education carried out at home provides the child with four aspects in learning to live: (a) early insertion in the organization and economy of the family; (b) bilingualism; (c) differences according to gender; and, (d) cultural learning about expectations from life. School expectations for the Otomi family are defined by the culture, the social organization and the farmworker economy. Gender differences are seen from an early age; children collaborate in supporting the home while at the same time attending school. It is important to note that these expectations differ from what the teachers, principals and school administrators consider, showing us in this area the two cultures do not meet (Acle, 2003).

Differences in school administrators' and teachers' attitudes have to do with elements that are significantly interwoven: (1) their own view of education of indigenous groups, corresponding generally to the view of the dominant culture; for example, children should stop speaking their language, stop dressing in traditional attire, that school is a space belonging to the Department of Public Education and not to the community, etc.; (2) their length of stay at the school, since the longer they remain in their post, the more possibilities they have for coming to know the community and for relating to it adequately. This is seldom achieved, however, since there is high mobility of teachers.

All of the above serves to reveal ecological networks that are established in this "created habitat" which is the school. Using an ecological approach in screening for special educational requirements in children from rural and indigenous areas, and for addressing them accordingly, reveals the need to include other variables for analysis. The interaction of these variables with the child makes it possible to gain a better understanding of this particular issue and leads to intervention proposals that fit reality. Clearly the task is not easy, but responsibility for these difficulties should not continue to be focused on the child, particularly in these populations where improper application and interpretation of tests can add yet another element of marginalization: that of disability.

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